

Department of Land and Natural Resources

Sustainability Hotspot

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WAIPIO VALLEY

~Big Island of Hawaii~



Top: Aerial of Waipio Valley. Bottom: Historic drawing of ancient settlement. For generations, Waipio Valley was a royal center to the ancient Hawaiians. Hidden amongst the green hills are numerous historic sites, *heiau* (temples), house sites, *kalo loi* (taro patches) and agricultural terraces.

*E*xtending for approximately 23.5 miles along the Hamakua Coast on the island of Hawaii is an array of open ditches, flumes and tunnels from Waipio Valley to Paaui. The Lower Hamakua Ditch System, as it is called, was completed in 1910 and was designed to transport sugarcane and supply processing water. The ditch system was later used to deliver an average of 40 million gallons per day (mgd) of water as an irrigation source for sugarcane.

Although Hamakua Sugar Co., Inc. farmed 21,400 acres, only 6,000 acres were irrigated with this water. Because of the rainfall in the area, little irrigation was needed for sugarcane, but the additional water source and storage was important because droughts of 30 days or longer are common on the island.

In recent years, the Lower Hamakua Ditch has transported an average of approximately 30 mgd. The system diverts water from four streams (Kawainui, Alakahi, Koiawe and Waima) which eventually flow into Waipio Valley. Of the 38,500 acres in the Lower Hamakua Ditch Watershed:

- approximately 23 % (8,900 acres) is owned by the State of Hawaii;
- 7 % (2,650 acres) is owned by the County of Hawaii;
- approximately 70 % (27,000 acres) is privately owned.

In 1989, the Hamakua Sugar Co. diverted the headwaters of Hakalaoa Falls into a tributary of Lalakea Stream. This ceased the flow over the Hakalaoa Falls and directed all the water over Hiilawe Falls as a single waterfall, but total flow to the ocean remained unchanged. Thus, the scenic value of the historic twin falls of Waipio has been absent since this time.

This diversion was done in an emergency to allow repair of the Lower Hamakua Ditch Tunnel behind the face of the falls which was damaged by a landslide on the face of Hakalaoa Falls. The diversion was left in place to decrease the likelihood of damage to the repair flume which is still exposed to Hakalaoa Falls. Removal of the stream diversion above the falls would cause the temporary ditch patch in the face of Hakalaoa Falls to fail under the first major rainfall, ceasing service from the Lower Hamakua Ditch.

Although Hamakua Sugar Co. is no longer in operation, there are many individual farmers who have used and continue to use the ditch water. However, maintenance of the ditch has been temporarily taken over by the State Department of Agriculture (DOA) and it is quickly falling into disrepair.

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Top: The lush, green upper Waipio Valley.
Bottom: Valley stream flowing into the ocean.

Although substantial surface water is diverted from Waipio Valley, flooding, *auwai* (irrigation ditch, canal) maintenance, and the restoration of the scenic and historically significant twin waterfalls within the valley are the major, immediate water concerns of residents. A long-term concern is for the restoration of natural stream flows. Factors with bearing on management of this resource are as follows:

- The Natural Resource Conservation Service (NRCS) is currently conducting botanical, stream ecology and cultural resource studies to supplement their draft Environmental Impact Statement (EIS) for restoration of the long-term utility of the ditch.
- NRCS requirements to secure funding are tenuous and DOA has been negotiating with Kamehameha Schools Bishop Estate (KSBE) for the necessary land/ditch rights for the project.
- From Kukuihaele to the terminus at Paauilo, KSBE owns 60% of the land. The remainder is owned by about 32 private entities and this needs further verification. Some of these lands were leased by Hamakua Sugar Co. and given up in the bankruptcy proceedings while some were utilized through letter agreements and handshakes.
- Based on the title report prepared in the foreclosure sale, deeds issued to KSBE do not show any encumbrances to Hawaiian Irrigation Company which formerly operated the ditch. The NRCS project includes partial restoration at the headwaters of the ditch system.

The complex issues surrounding this hotspot are due to the multitude of players, lack of coordinated planning, unclear responsibility, cost of permanent repair and continued maintenance of the ditch which includes land acquisition, design, permitting, construction, and lack of funding.

DLNR's Sustainability Hotspot Team for Waipio Valley:

Roy Hardy - Water Commission, Oahu, 587-0274;

Ross Cordy - Historic Preservation;

Bob Nishimoto - Aquatic Resources;

Charlene Unoki - Land Division;

is responsible for the management and long-term sustainability of this valuable resource.

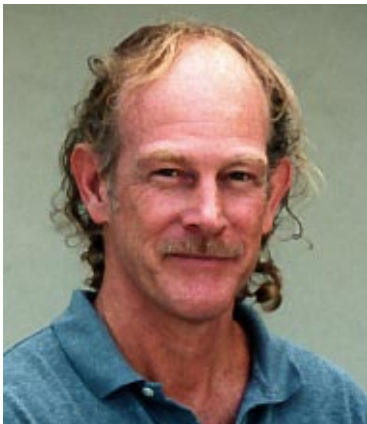
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Hotspot Team members (top to bottom): Hardy, Cordy, Nishimoto.

DLNR's Vision for the Future and How to Attain It

In DLNR's vision for the future of Waipio Valley:

- the temporary stream diversion would be removed to restore the historical, traditional, and aesthetic values of stream flow over the twin waterfalls of Hakalaoa and Hiilawe;
- the utility or some other alternative water source would be restored for individual farmers who historically and presently use the ditch water;
- streams diverted by the Lower Hamakua Ditch will be partially or completely restored; and
- *auwai* maintenance would be established in cooperation between residents within Waipio Valley.

To attain DLNR's vision for the future of the resource, the Commission on Water Resource Management (CWRM) issued an order to show cause to KSBE and the State DOA why the restoration of streams feeding the Lower Hamakua Ditch and Hakalaoa Falls should not be ordered within a fixed time. KSBE and DOA were ordered to submit:

- a signed agreement between KSBE and DOA securing the land rights necessary for the construction of the Lower Hamakua Ditch Watershed Project; and
- evidence of approval by the State Legislature for the State's portion of the funding for the Lower Hamakua Ditch Watershed Project.

CWRM has asked KSBE and DOA to respond to this request no later than June 1, 1998.

Thus far, DLNR has deferred action regarding possible retroactive fines for violations which diverted Hakalaoa Stream without a Stream Channel Alternation Permit, Diversion Works Permit and an Interim Instream Flow Standard Amendment. CWRM has also asked DOA to submit the necessary permit applications as soon as possible.

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Top to bottom: Hotspot Team member Unoki of DLNR's Land Division, Lalakea Pond, historic photograph of valley floor showing irrigated fields.

Up to now, CWRM has provided the forum for the community to voice concerns over the management of the water resources in the area. Additional effort using 'working' or 'round table' group efforts which include all key players in the community are an option and have proved valuable in the neighboring Waimea area.

The cost of the NRCS project to study this site and restore the long-term utility of the Hamakua Ditch is \$9,579,200. No funding is currently budgeted. 🌿